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SUBJECT: SOUTH AFRICAN ENVIRONMENT, SCIENCE, AND TECHNOLOGY MONTHLY BRIEFINGS, MAY 2009

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1. (U) Summary: This is the South African Environment, Science and Technology Monthly Briefings Newsletter, May 2009, Volume 4, Number 5, prepared by the U.S. Embassy Pretoria, South Africa.

Topics of the newsletter:

- Scientists Develop New Carbon Emission Reduction Process
- South Africa and Uganda Sign S&T Bilateral Agreement
- South Africa Frogs Facing Extinction
- Lion Park Forced Out by Development
- Rare Orchid May Become Extinct
- Environmental Group Calls for Investigation of Gauteng MEC for Conservation
- Municipal Health Service Sees Deterioration in Water Quality
- Poor Water Quality Limits Business Growth
- SANParks Opposes Mining Project at Mapungubwe
- Monthly Factoid

Scientists Develop New Carbon
Emission Reduction Process

2. (U) Wits University Centre of Material and Process Synthesis professors David Glasser, Diane Hildebrandt, Brendon Hausberger and Bilal Patel, and Rutgers professor Benjamin Glasser have made a breakthrough discovery that reduces carbon dioxide emissions from the source and that can be applied to a range of processes. David Glasser said that their research developed new techniques for analyzing what causes emissions, and how to design processes to reduce carbon dioxide emissions. He added that once these processes are understood, it is "relatively simple to eliminate unnecessary emissions and minimize the contributions from other sources."

3. (U) Glasser cited as an example a plant making liquid fuel from coal. He said with their process the plant can reduce its overall CO2 emissions by using CO2 and hydrogen as intermediaries. He noted that the plant achieves higher emission reductions using CO2 and hydrogen, even though this appears to be an inferior method. Glasser added that there is a pilot plant running in China and a

demonstration plant in Australia, which incorporate these ideas. Glasser said the technique can be applied to a number of different processes, giving it a substantial impact on combustion processes. The center at Wits has 40 post graduate students and about 20 full time employees who are funded by industry.

South Africa and Uganda Sign
S & T Bilateral Agreement

14. (U) South Africa and Uganda signed a bilateral Science and Technology Agreement on April; 16, 2009. The two countries will jointly identify scientific and technological priorities and consolidate resources. South Africa and Uganda have been negotiating the agreement since 2006. Areas of cooperation include bioscience, indigenous knowledge systems, environment and climate change, energy research, innovation management capacity, information technology, and human capital development. Uganda and South Africa will continue their current joint efforts under the Group on Earth Observation project. Science and Technology Minister Mosibudi Mangena said that, over the past decade, South Africa's science has been greatly enriched by collaborations with African counterparts.

South Africa Frogs Facing Extinction

15. (U) North-West University African Amphibian Conservation Research Group Director Dr Louis du Preez warned that the South African frog populations are rapidly decreasing. Du Preez, who is also the Head of the Green Trust Threatened South Africa Frog Project, is chairing an effort to produce the first-ever conservation action plan for South Africa's twenty-one threatened frog species. Du Perez noted

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that the rapid decline in frogs is cause for alarm because frogs are the thermometers of environmental health. He noted that frogs are exposed to the complete range of air, water and land pollutants since they live in both aquatic and terrestrial environments. Several South Africa frogs are restricted to small geographical areas and the loss of their habitat has a devastating effect on population numbers. The habitat of the Ghost Frog in the Elandsberg Mountains, for example, has become a pine plantation. Pine needles acidify the water in the stream areas where the frog lives. Du Perez and two doctoral students recently discovered the first Ghost Frog seen in years in the Elandsberg Mountain.

16. (U) Du Perez says the Elandsberg forestry companies are collaborating with the Green Trust to conserve this frog, hiring a fulltime ecologist and bringing inexpensive equipment to 'pluck' trees from the stream area where the frog lives." Another endangered frog is Rose's ghost frog, a rare species found only on Table Mountain, where it lives in streams and moist, forested gorges. It is under threat from invasive plants, increasing numbers of visitors and the high number of fires. The construction of more water holding areas has taken away water from the streams where the frogs' eggs and tadpoles develop. The Western Cape NGO 'Friends of the Western Leopard Toad' is helping to conserve this threatened species, which lives and breeds in the urban environment of the Tokai/Muizenberg/Fishhoek. Western Leopards are frequently killed by cars speeding on the roads. The Friends have erected toad crossings that say: "Caution! Western Leopard Toads."

Lion Park Forced Out by Development

17. (U) Lions have ranged freely throughout Johannesburg's Lion Park for forty-one years, but a high-density development is forcing the Park to relocate. The new development will include 1528 residence on various sized plots. Current residents question whether the rural area's infrastructure will be able to handle this increased

capacity. Local resident Nicci Wright, an engineer, said that the area is a wetland fed by natural springs, and that the proposed sewage system locates its pump at the lowest point in the area. She said when she questioned the effectiveness of this location she was told that Randburg Water would handle all maintenance. Wright said she knows of three pumps handled by Randburg that are currently out of order and pumping raw sewage into the Klein Jukskei and Hartebeespoort Dam. Developer Golder Associates Africa's representative said that an extensive EIA was completed and all environmental issues were addressed with sufficient mitigation efforts. Lion Park Acting Manager advised that the staff and animals would move after the FIFA World Cup in 2010 when their contract officially expires. He noted that the Lion Park is no longer in the rural areas as it used to be, and that "we are in the middle of the suburbs now. It's not very nice."

Rare Orchid May Become Extinct

18. (U) The only known population of a rare wild orchid is threatened by development plans near the Cradle of Humankind in Maropeng. Conservationists say the orchid could become extinct. Black Eagle Project spokesman Arthur Alberston added that endangered or QProject spokesman Arthur Alberston added that endangered or threatened animals such as caracal, jackals and leopards move through the area and the development would interrupt their transit paths. The application for this high-density residential and business unit project is pending with the Gauteng Department of Agriculture, Conservation and Environment (GDACE). Albertson says the project violates several national and provincial regulations and policies. If GDACE does grant the permit, the NGOs say they will take legal action to stop the construction. GDACE, Mogale City and the Walter Sisulu National Botanical Gardens officials claim they have been investigating the feasibility of establishing a 2,000-hectare reserve in the that areas which would safeguard the orchid's habitat and allow restocking of wildlife.

Environmental Group Calls for Investigation
of Gauteng MEC for Conservation

19. (U) The Environmental and Conservation Association (ECA) has filed a lawsuit seeing to overrule Gauteng MEC for Agriculture, Conservation and Environment Khabsisi Mosunkuntu's decision to permit permitting a new road through one of Gauteng's wetlands. Various media reports have also raised questions about Mosunkuntu's decision to overrule GDACE ruling that the road should not be built,

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citing Musunkuntu's involvement with the developments seeking the roadway. Gauteng Democratic Alliance Leader Jack Bloom submitted a dossier detailing Mosunkuntu actions involving irregularities in eight separate developments across the province to Gauteng premier Mbhazima Shilowa last year. Bloom called for a commission to investigate Mosumkuntu. ECA Chairman Nicole Barlow said the wetland's road is yet another example of Mosumkuntu "sidestepping" the law and making decisions contrary to GDACE's expert opinion.

Municipal Health Service Sees
Deterioration in Water Quality

10. (U) Tshwane municipal health service division tabled a report before the Metro Council on May 1, 2009 describing the rapid deterioration of the quality of water and food in the area. The report contains findings by the Agricultural Research Council (ARC) for the period July 1, 2005 to June 2008. Food and water samples were taken and tested for compliance with the Foodstuffs, Cosmetics and Disinfections Act. ARC samples included tap water, reservoirs, bottled water, and water in tankers, boreholes, rivers and streams. Food samples were taken from pasteurized milk, raw milk, dairy products, juice and ice cream. ARC's findings indicated that 57% of all water samples complied with legal requirements; 60% of bottled

water complied; 53% of food complied with legal requirements regarding microbiological analysis (a six percent decline from previous period; and that 63% of food complied with legal requirements regarding chemical analysis (a 35% decline). The report stated that there are serious personnel shortages in municipal health services due to the council's alternative service delivery (ASD) process.

Poor Water Quality Limits Business Growth

¶11. (U) Independent water expert Anthony Turton said South African businesses growth could be constrained by the lack of clean water resources. He added that business should stop the "blame game" and act swiftly in partnership with the government to deal with the threat. Turton said, "Business cannot sit idle any longer. We need new partnerships between the government, organized business and the national science councils to develop and resource a fresh strategic vision." He advised business to see water as a business risk and to form partnerships similar to those formed in response to crime. Turton stated, "Companies must understand business risks in terms of input, process and output and then develop mitigation strategies for each of these sets of issues."

¶12. (U) Turton said the water problem SA faced was that of quality and quantity, as well as demand and supply. He said, "By 2035 SA will need 65-billion cubic kilometers of water and our current national stock stands at 33-billion. Our problem is that we are managing our water resources so badly, and are putting pressure on available fresh water." Turton also suggested that the country's water allocation reform process should ensure that industry - which contributed about 80% of gross domestic product (GDP) but received only about 20% of water allocation - should get more water at the expense of agriculture, which received about 60% of water allocated but only contributed about 2% to GDP. Turton resigned from the Qbut only contributed about 2% to GDP. Turton resigned from the Council for Scientific and Industrial Research last year after he made controversial remarks about the implications of SA's water situation on socioeconomic development.

SANParks Opposes Mining Project at Mapungubwe

¶13. (U) South African National Parks (SANParks) is challenging an application for a R3 trillion mining operation to be established at the entrance to the Mapungubwe World Heritage Site. SANParks spokesperson Wanda Mkhutshulwa said on April 20, 2009 that SANParks was opposed to the project because it threatened the environment around Mapungubwe, particularly the quality of its water. Mkhutshulwa noted that SANParks mandate is to ensure the environment surrounding the national parks is protected. She stated, "From our view, the mining project will have a negative impact on the water in the park." Department of Minerals and Energy spokesperson Bheki Khumalo stressed that the mining project was not a done deal. Khumalo said, "After all objections have been registered and all concerns considered the department will make a determination. We are still months away from that."

¶14. (U) The proposed mining site is near the Limpopo River, which forms the border between South Africa and Zimbabwe. The closest

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town is Musina. The mine's western boundary is seven kilometers east of the Mapungubwe National Park, and the coal processing plant infrastructure would be twenty-seven kilometers from the Mapungubwe World Heritage Site. The proposed colliery would have the potential to produce five-million tons a year of coking coal, starting with one-million tons a year and ramping up to full capacity by 2011. The life-of-mine stretches beyond 2040. Independent Power Producer (IPP) Mulilo Energy is considering constructing a power station in the area, although CoAL said it was not reliant on the sale of coal to the power station to make the project feasible. The power station would ultimately produce about 900 MW, and initial designs show that it would be located directly below the CoAL tenement area.

¶15. (U) The Mapungubwe National Park is a game reserve and home to the archaeological treasure of Mapungubwe, a kingdom predating that of Great Zimbabwe. Mapungubwe was the base of a trading empire that traded with the people of China, India, Egypt and Persia, exchanging ivory, gold around the year 1200. The Mapungubwe Cultural Landscape became South Africa's fifth World Heritage site in July 2003, and in May 2004, it was officially announced as the Mapungubwe National Park. The site was discovered in 1933, and is said to be where an Iron Age metropolis was ruled by an African king almost one thousand years ago. Mapungubwe National Park Manager Tshimangadzo Nehemani said the Park had 26 000 visitors in 2007. A new interpretation centre will open by the end of this year, allowing the public to view the gold work uncovered at the site, including the world-famous tiny golden rhino, a gold scepter and gold bowl.

¶16. (U) Coal of Africa (CoAL) Chief Operations Officer Riaan van der Merwe stated in a community meeting that the project would create 14,000 direct and indirect employment opportunities during the construction phase and 30,000 direct and indirect jobs during the operational phase. Local business owners have complained that the CoAL still has not addressed concerns raised at previous meetings, including the need for an environmental impact assessment study on how local roads would be affected by coal-hauling trucks and dust from the coal. Mopane Bush Lodge Manager Paul Hatty said, "We have such a beautiful environment here. The atmosphere is clean and all of that will be wiped out by the coal business." Hatty added that the lodge, which is seven kilometers from the proposed mine site, drew over one hundred international visitors last year, all of whom visited the heritage site. He said, "We will lose our clients as no sane person will pay money to be swallowed by coal dust."

¶17. (U) Vhembe District Municipal Councilor Mapulanka Baloi welcomed the proposal, saying it would benefit many people. He added that the mine would create new levels of economic development and employment and bring the province to a new level of prosperity. Van der Merwe emphasized that CoAL would manage the mine in accordance with mining environmental regulations. Hatty responded that "Even with the best environmental controls, the environmental degradation caused by coal mining, similar to that around Witbank, will kill any hopes of growing tourism, both international and local, to this prime pristine area of Africa." Local businesses and residents also fear that if this project is approved, more coal mines would be established in the area. Hatty said, "Anglo Coal has already purchased four farms even closer to the National Park and Heritage Site, and three other farms next to Mapungubwe Park entrance show promising signs of exploitable coal."

Monthly Factoid

¶18. (U) In 2002 South African internet entrepreneur Mark Shuttleworth, then age 28, became Africa's first astronaut. Three years later Google adopted Shuttleworth's Ubuntu software as its in-house operating system.
www.southafrica.info/about/414421.htm#innovations

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